

## MARTICORENIA: A NEW GENUS OF MUTISIEAE (COMPOSITAE)

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IN THE COURSE OF A revisionary study of the genus *Leuceria* Lagasca (Compositae, tribe Mutisieae, subtribe Nassauviinae), *Leuceria foliosa*, a species described by the Chilean botanist R. Philippi in 1856, seemed to be out of place. The species grows in the Andean region of central Chile. A careful study of this species and of all the genera of this subtribe convinces me that *Leuceria foliosa* should be recognized as a new genus.

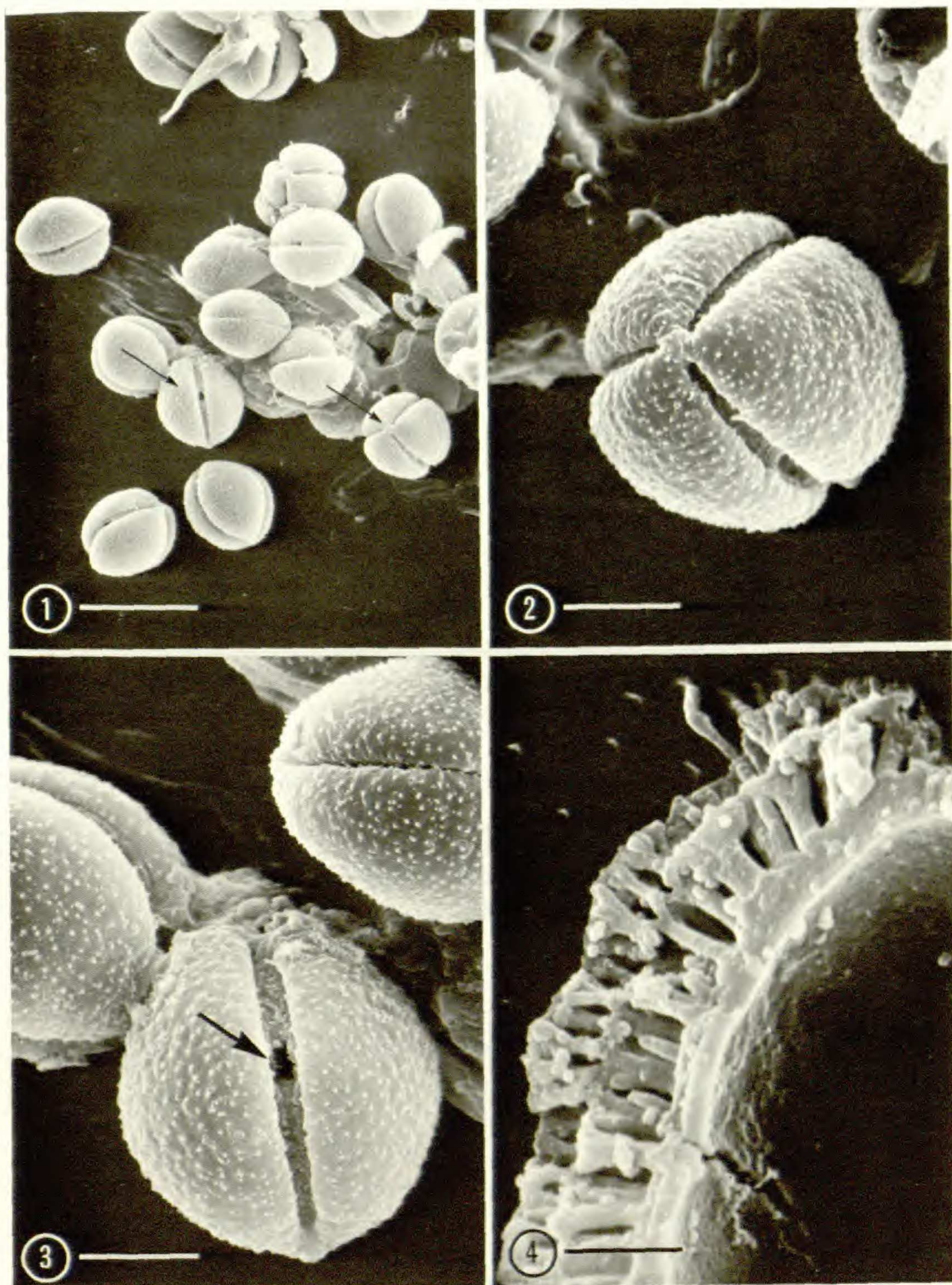
A description of the new genus and its one species, with illustrations, pollen analysis, chromosome number, and discussion of the generic relationships of the new taxon is presented in this paper. The abbreviations for herbaria listed in the citations of specimens are taken from the fifth edition of the *Index Herbariorum* (Lanjouw & Stafleu, 1964).

## MATERIAL AND METHODS

Some pollen grains were acetolysed according to the method outlined by Erdtman (1960); other pollen grains were placed in 95 per cent ethanol stained with basic fuchsin and mounted in glycerine jelly. For Scanning Electron Microscopy (SEM) the acetolysed pollen grains were used. After acetolysis the pollen samples were washed several times in glass-distilled water to remove traces of acids. Each sample was dispersed in a drop of distilled water and placed on a specimen holder. The samples were then air dried, coated with 50 Å to 100 Å carbon and about 200 Å to 300 Å gold-palladium alloy for conductivity. Finally the specimens were photographed using a high resolution SEM, AMR model 900. FIGURES 1-4.

To obtain the chromosome number, flower buds were collected from plants growing in their native habitat. Buds were killed and fixed in ethanol and glacial acetic acid (3:1), transferred to 70 per cent ethanol after 24 hours, and refrigerated. Anthers were squashed in aceto-carmin.

**Marticorenia** Crisci, gen. nov. Capitulum multiflorum, homogamum; flores hermaphroditi. Involucrum hemisphaericum; bracteae lineari-lanceolatae, biseriatae. Receptaculum vix concavum, paleaceum; paleae rigentes vix amplexiflorae. Flores albo-violacei, bilabiati, labio interiore bipartito lobis revolutis, labio exterioriore latiore ligulato tridentato. Antherae glabrae, basi longe sagittatae. Stylus bifidus; rami semiteretes, apice truncati penicillatisque, divergentes non revoluti. Achaenia cylindrata, papilloso-puberula. Pappus uniseriatus, pilis plumosis albis. Frutex dense pilosus; foliis alternis, sessilibus, ovatis lobatisque, basi cordatis et semiamplexicaulibus. Capitula pedunculata laxe cymosa. Pedicellus unibracteatus. SPECIES TYPICA: *Marticorenia foliosa* (Philippi) Crisci.



FIGURES 1-4, scanning electron micrographs (SEMG) of *Marticorenia foliosa* (from *West 5250*). 1, several acetolysed pollen grains, arrows indicate the pollen grains shown in FIGURES 2 and 3, the bar at the lower left hand corner represents ca.  $40\ \mu\text{m}$ ; 2, a pollen grain in polar view, note the furrow showing zonocolporate condition, the bar represents ca.  $10\ \mu\text{m}$ ; 3, a pollen grain in equatorial view with arrow pointing toward the germ pore, the bar represents ca.  $10\ \mu\text{m}$ ; 4, portion of pollen grain mechanically broken to show different wall components, the bar represents ca.  $2\ \mu\text{m}$ .

Shrubs more or less flabelliform in aspect, with short caudex woody at the base. Roots stout, woody with dissected vascular bundles. Stems branched from the base. Leaves alternate, sessile, decurrent, ovate-elliptic, lobulate, becoming linear-lanceolate above. Inflorescence a much branched terminal cyme. Pedicels each with a linear-lanceolate accessory bract, acute at apex. Heads numerous, terminal. Head with several flowers; flowers all equal, hermaphroditic, fertile. Involucre hemispherical, composed of bracts in two series, linear-lanceolate, acute at the apex, pubescent on the abaxial surface. Receptacle slightly concave, paleaceous; paleae scarious, conduplicate around the flowers, lanceolate, the abaxial surface densely pubescent, the apex incised. Corolla white-violaceous, bilabiate, tube broader toward the apex; outer lip lanceolate, liguliform with four veins, the apex three-toothed; inner lip bifid, each lobe revolute, acute at apex. Stamens five, the filaments inserted at a point halfway from the base of the tube; anthers connate with oblong apical appendage tailed at base, partially exerted in the mature flowers. Style bifid, its branches flattened, truncate with a crown of elongate collecting hairs at the apex and papillose with shorter ones on the adaxial surface, glabrous on the abaxial surface. Achenes more or less cylindric with long double trichomes. Pappus of numerous white plumose hairs in one series.

Pubescence of three kinds of trichomes, e.g., (1) *glandular uniseriate* (60–150 $\mu$ m), four—nine-celled (borne on leaves, stem, paleae, receptacle, involucre, corolla, and sparsely on the achenes); (2) *non-glandular uniseriate*, few-celled (on the corolla); (3) *double hairs* or “Zwillingshaare” (Hess, 1938) (200–250 $\mu$ m) of two cells joined along their inner wall but not quite meeting at the apex (on the achenes). One species.

It is a pleasure to name this new genus *Marticorenia* for Professor Clodomiro Marticorena of the Instituto Central de Biología, Universidad de Concepción, Concepción, Chile, who has made important contributions to our knowledge of the Chilean flora and to the study of palynology in Chile.

***Marticorenia foliosa* (Philippi) Crisci, comb. nov.**

FIGURE 5a–g.

*Leuceria foliosa* Philippi, Linnaea 28: 720. 1856.

*Lasiorrhiza foliosa* (Philippi) Kuntze, Rev. Gen. Pl. 1: 350. 1891.

Shrubs 40–50 cm. tall. Stems erect, much branched from the base, hirsute. Leaves sessile, ovate-elliptic, lobulate, sparsely pubescent beneath and densely so above, semiamplexicaul, the lower 5–10 cm. long, 3–5 cm. wide; lobules 1 cm. long, 1 cm. wide at the base; upper leaves linear-lanceolate 2 cm. long, 0.7 cm. wide. Inflorescence a dichotomous cyme; heads numerous (2–23); pedicels with a linear-lanceolate accessory bract acute at apex, abaxial surface pubescent, adaxial surface glabrate, 11–12 mm. long, 2 mm. wide; involucre hemispherical, 1.5–2 cm. in diameter, formed by 2 rows of bracts 2 cm. high; involucral bracts linear-lanceolate, acute at apex, abaxial surface pubescent, the adaxial glabrous,

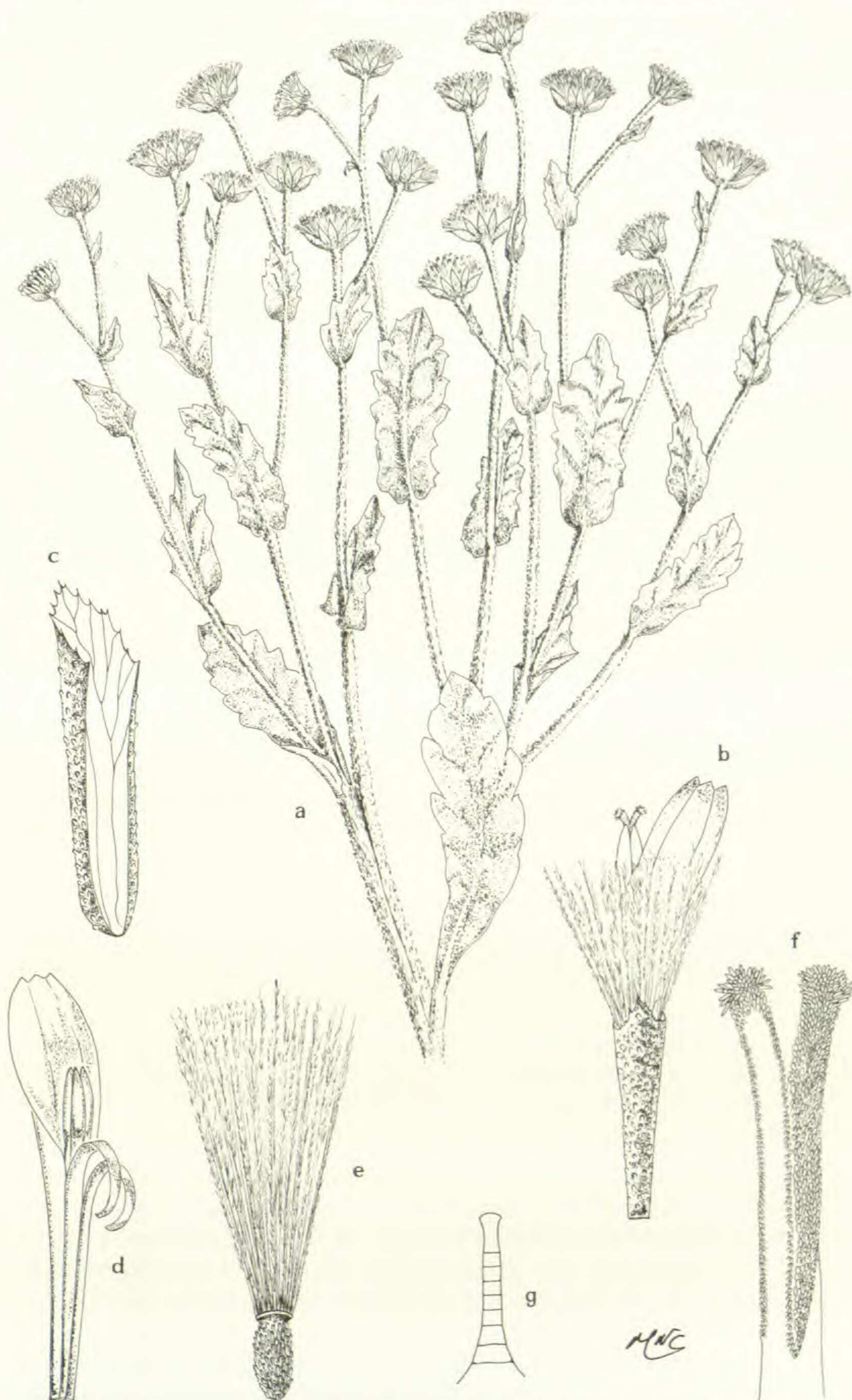


FIGURE 5. *Marticorenia*. a-g, *M. foliosa* (from Zöllner 2004): a, habit of the plant,  $\times 1/4$ ; b, flower with paleae,  $\times 4$ ; c, paleae,  $\times 6\frac{1}{4}$ ; d, corolla,  $\times 4$ ; e, achene and pappus,  $\times 4$ ; f, style,  $\times 13$ ; g, trichome from stem,  $\times 150$ .

8–15 mm. long, 1.5–2 mm. wide; receptacle slightly concave, paleaceous, slightly pubescent; paleae broadly obovate incised at apex, scarious, slightly conduplicate around flowers (amplexiflorous), adaxial surface glabrous, abaxial surface densely pubescent, 7 mm. long, 2 mm. wide. Flowers about 33; corolla white-violaceous 13–15 mm. long; tube 5–8 mm. long, 1 mm. in diameter at the base and 1.5 mm. at apex; outer lip with 4 veins, three-toothed at apex, abaxial surface and margins sparsely pubescent, 8–9 mm. long, 2.5 mm. wide; inner lip bifid, abaxial surface sparsely pubescent, 5–6 mm. long, each lobe 0.5 mm. wide; anthers tailed, glabrous, 6–8 mm. long; style bifid with branches 2 mm. long. Achenes 2–4 mm. long, 0.5–1 mm. wide, cylindric, with long hairs; pappus of 18–20 white plumose hairs, 10 mm. long, in one series.

**POLLEN.** Grains zonocolporate (3), subprolate to prolate-spheroidal, 34–45 $\mu$ m. Colpi 20–41  $\times$  2–3.5 $\mu$ m, extremes rounded; apocolpium 2–3.5 $\mu$ m in diameter, mesocolpium 15–17 $\mu$ m; membrane of the colpi rather smooth as seen with optical light microscope. Exine 4–5 $\mu$ m thick at the pole, 5–6 $\mu$ m at the equator. Infratectum 1–1.5 $\mu$ m thick at the pole and 2–2.5 $\mu$ m at the equator. Nexine 1–1.5 $\mu$ m thick at the pole and 1.5–2 $\mu$ m at the equator. Tectum and infratectum separated from each other by a thick layer parallel to the nexine.

**CHROMOSOME NUMBER:**  $n = 22$  (Chile, Provincia de Aconcagua, Maintencillo sobre Río Blanco, 2750 m., 6 May 1973, *O. Zöllner* 6460, GH).

**NEOTYPE:** Chile, Provincia de Santiago, Las Arañas (Cajón del Mapocho), Jan. 1862, *Philippi* 1132 (LP).

**DISTRIBUTION:** Andean region of central Chile above timberline between 32°S and 35°S and 70°W and 71°W, from 2700 to 3300 meters altitude. Flowering from January to May.

**SPECIMENS EXAMINED.** Chile. Provincia Aconcagua, Valle de Aliste al Norte de Río Blanco, 2800 m., 3 Mar. 1970, *O. Zöllner* 3899 (LP); Valle Castro cerca de Río Blanco, 3000 m., 21 Feb. 1968, *O. Zöllner* 2994 (LP); Tres Lagunas, 2800 m., 10 Apr. 1971, *O. Zöllner* 4963 (LP); Río Blanco, 2750 m., 2 Apr. 1971, *O. Zöllner* 4756 (LP); Maintencillo sobre Río Blanco, 2750 m., 6 May 1973, *O. Zöllner* 6460 (GH); between Laguna del Inca and transandine railroad tracks, 2840 m., 5 Feb. 1936, *James West* 5250 (GH); Provincia Santiago, Cordillera Las Arañas, Jan. 1861, Landbeck *s.n.* (SGO); Cordillera de Santiago, Feb. 1857, *s. coll.* and *s.n.* (SGO); Tal los Castaños (Olivares-Colorado-Maipo-Tal) Cordillera de Santiago, 3300 m., 3 Feb. 1939, *C. Grandjot* 3803 (GH, SI); near Laguna Negra, 10,000 feet, 6 Feb. 1902, *G. T. Hastings* 615 (US).

Professor Carlos Muñoz Pizarro (1960), who published a book about Philippi's type specimens, was unable to find the type of *Leuceria foliosa*. My own search, which included the herbarium of the Museo de Historia Natural de Santiago, Chile, in which are housed the main collections of Philippi, was also negative. The material cited originally and its duplicate are believed to be lost or destroyed. It was, therefore, necessary to choose a neotype; the specimen chosen was collected and identified by Philippi and comes from the area of the type locality.

The combination *Lasiorrhiza foliosa* was made by Kuntze because he considered *Lasiorrhiza* the appropriate generic name to adopt for *Leuceria*. However, the two genera, published at the same time by the same author had been combined previously by Bentham and Hooker where *Leuceria* was adopted with *Lasiorrhiza* in its synonymy.

#### RELATIONSHIPS OF THE NEW GENUS

*Marticorenia* is a member of the tribe Mutisieae, subtribe Nassauviinae, which has characteristic bilabiate corollas with the outer lip three-toothed and the inner lip bifid; anthers long tailed at the base; and style bifid with branches truncate at the apex.

Philippi described *Marticorenia foliosa* as a species of *Leuceria*. However, *Marticorenia* is very different from the other species of *Leuceria* as is shown in TABLE 1.

TABLE 1

Leuceria	Marticorenia
Herbs, perennial or annual.	Shrubs.
Leaves variable in shape but never ovate-lobulate, basal leaves always petiolate.	Leaves all ovate-lobulate, sessile.
Receptacle glabrous, without paleae or with only a few paleae in the flowers of the margin.	Receptacle pubescent, with paleae in all flowers.
Corolla glabrous.	Corolla pubescent.
Pollen: exine with tectum and infratectum of the same thickness and separated from each other by a thin layer not parallel to the nexine (zigzag).	Pollen: exine with tectum and infratectum of different thicknesses and separated from each other by a thick layer parallel to the nexine.
Chromosome number: $n = 20$ (7 species counted).	Chromosome number: $n = 22$ (1 species).

*Marticorenia* can be easily distinguished from most of the other genera of the subtribe Nassauviinae by the presence of paleae in all of the flowers of the head. This character is shared with *Jungia* Linnaeus f. and *Pleocarphus* D. Don, genera that also have other characters in common with *Marticorenia*.

With *Pleocarphus*, *Marticorenia* shares the following characters: shrubby perennial habit; entire leaves; cymose inflorescence; pedicellate heads; hemispherical involucre with 2 rows of bracts; pubescent receptacle; pubescent flowers; glabrous anthers; pollen: exine stratification and grain without polar elevations; and style truncate at apex. The distribution of both genera is in the Andean region of central Chile.

With *Jungia*, *Marticorenia* shares these characters: entire leaves; cymose inflorescence; pedicellate heads; pubescent receptacle; uniseriate pappus; involucre with 2 rows of bracts; pubescent flowers; glabrous anthers; pollen: exine stratification, grain subprolate to prolate spheroidal without polar elevations; style truncate at apex.

However, *Marticorenia* is easily distinguished from both *Pleocarphus* and *Jungia* by the following characters:

*Pleocarphus* has tomentose pubescence; linear, petiolate, stipulate leaves with revolute margins; yellow flowers; linear (five times longer than wide), beaked, and sparsely pubescent achenes; hispidulous pappus in more than one series; prolate to subprolate pollen grains, membrane of the colpi with sexine process.

*Jungia*, a genus composed of shrubs or vines (rarely herbs), has tomentose pubescence; leaves cordate at base, petiolate and stipulate; campanulate, cylindric or turbinate involucre; beaked linear achene (five times longer than wide), glabrous or sparsely pubescent; pollen grain with membrane of the colpi with sexine process. The distribution of *Jungia* is in Central America (only one species) and the subtropical areas of South America.

Summarizing, we can establish that *Marticorenia* is easily distinguished from most of the genera of the subtribe Nassauviinae by the presence of paleae in all of the flowers of the head but it shares that character with *Jungia* and *Pleocarphus* from which it may be distinguished by the characters noted in the following key:

- A. Lower leaves with sparsely tomentose pubescence, petiolate, stipulate.
  - B. Flowers yellow, pappus in more than one series; leaves linear, margin entire, revolute. . . . . *Pleocarphus*.
  - BB. Flowers white, pink-violet (rarely yellow), pappus in one series; leaves orbicular, cordate or widely lanceolate, margin lobulate. . . . . *Jungia*.
- AA. Lower leaves lacking tomentose pubescence, sessile, exstipulate. . . . . *Marticorenia*.

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